II. EXISTING CONDITIONS

This section summarizes the assessment of existing transportation conditions and describes the main transportation issues identified in the study area. The Study Team conducted an extensive data collection effort to gain an understanding of existing conditions in the study area. In addition to collecting data for the quantitative assessment of existing conditions, the Study Team conducted field evaluations throughout the study area during peak and off-peak hours to further assist in the assessment of existing conditions. The assessment of existing conditions phase of this study included the conduct of an origin-destination study. This section presents a summary of the findings of the origin-destination study.

MAJOR ROADWAYS IN THE STUDY AREA

The major roadways in the study area are located in Northwest Washington, DC and in Takoma Park, Maryland. This section of the report describes the characteristics of these major roadways.

Georgia Avenue

As shown in Figure 2, Georgia Avenue is a principal arterial[1] running north-south from the southern terminus of the study area at Peabody Street to the northern terminus of the study area at Blair Road. The posted speed limit is 30 miles per hour (mph). Between Peabody Street and Eastern Avenue, Georgia Avenue has two travel lanes in each direction with parking allowed on an additional curb lane on each side. North of Eastern Avenue, Georgia Avenue is three-lanes-wide. There are no exclusive turn lanes along Georgia Avenue. There are adequate sidewalks provided on both sides of Georgia Avenue throughout the study area.

As shown in Figure 3, the primary land use along Georgia Avenue is commercial, but there are residential uses. There are two schools, the Kima Public Charter School and the Sister Patricia Bennett School, located within the study area. Also within the study area, the Water Reed Army Medical Center is located on the west side of Georgia between Fern Street and Aspen Street. The major issue along Georgia Avenue is traffic congestion during the peak hours throughout the study area, largely due to the lack of exclusive turn lanes and large volumes of commuter traffic.

A critical location on Georgia Avenue is the intersection of Georgia Avenue and Elder Street. Congestion at the Elder Street entrance to the Walter Reed Army Medical Center during peak hours, caused by the inspections of vehicles entering the hospital, is a major issue for traffic operations on Georgia Avenue. Northbound left turns and southbound right turns attempting to enter the Medical Center block through traffic along Georgia Avenue. Detailed descriptions of all of the issues identified in the study area, including additional issues along Georgia Avenue, are provided in the Issues and Recommended Improvements section of this report.

[1] All roadway classifications for roads in the District of Columbia were taken from the District of Columbia Functional Classification Map, January 1, 2002.

Click to View:

Figure 2. Functional Classification of Roads

Click to View

Figure 3. Generalized Land Use Map

New Hampshire Avenue

Within the study area, New Hampshire Avenue is a two-way, four-lane principal arterial that traverses the study area in a northeast-southwest direction from the intersection of Peabody Street to Eastern Avenue. The posted speed limit is 30 mph. There are two lanes in each direction with an exclusive turn lane for the southwest left turn movement at the signalized intersection at Eastern Avenue. New Hampshire Avenue is surrounded by commercial areas, with a few residential areas. There are sidewalks provided on both sides of the roadway throughout the study area. Vehicles traversing the intersection of New Hampshire Avenue and Eastern Avenue experience significant delays during the peak periods.

Eastern Avenue

Within the study area, from Peabody Street to Carroll Street, Eastern Avenue is a two-lane minor arterial running northwest-southeast, however, there are two lanes in each direction between Peabody Street and Van Buren Street. Eastern Avenue is interrupted by the Washington Metro Rail Red Line east of Piney Branch Road and west of Blair Road. There is also a break in continuity between Carroll Street and Cedar Avenue. From Georgia Avenue to Blair Road and from Piney Branch Road to Cedar Avenue, Eastern Avenue is a two-way, two lane collector. Eastern Avenue has a posted speed limit of 25 mph throughout the study area. Between Laurel Street and Cedar Avenue, Eastern Avenue is predominantly commercial; however, the majority of Eastern Avenue is residential. The Regency School is located on Eastern Avenue between Laurel Street and Willow Street.

On-street parking or off-street residential parking is permitted at various locations along Eastern Avenue, but it is limited to the west side of the roadway between Sheridan Street and Walnut Street and between Cedar Avenue and Piney Branch Road. There is also a time restriction for parking on the east side of Eastern Avenue between Laurel Street and Walnut Street. The Takoma Metro Station parking lot is located adjacent to the intersection of Cedar Street and Eastern Avenue, in Washington, DC.

Between New Hampshire Avenue and Laurel Street, there is either no sidewalk or the sidewalks are narrow on the east side of Eastern Avenue as well as a short section on the west side of Eastern Avenue near Blair Street. Between Laurel Street and Walnut Street the sidewalk provided on both sides of the roadway is narrower than the recommended five foot width.

As shown in Figure 4, at Carroll Avenue and Willow Street, Eastern Avenue intersects these roadways in a unique geometric layout causing difficult turning maneuvers. Also at this intersection there is congestion during the peak hours. Detailed descriptions of all of the issues identified in the study area, including additional issues along Eastern Avenue, are provided in the Issues and Recommended Improvements section of this report.

Click to View:

Figure 4. Geometry of Willow St., Carroll St. and Eastern Ave. NW

Piney Branch Road

Piney Branch Road is generally a two-way north-south minor arterial running from Georgia Avenue to Philadelphia Avenue through the study area. The posted speed is 30 mph. On street parking or residential parking is allowed on the majority of Piney Branch Road, but it is limited to the west side of the roadway from Butternut Street to Dahlia Street. Takoma Elementary School is located near the intersection of Piney Branch Road and Cedar Street. There are sidewalks provided along Piney Branch Road with the exception of a section on the southwest corner at the intersection with Blair Road.

Piney Branch Road intersects with several arterials including Georgia Avenue, Blair Road and Philadelphia Avenue and a collector, Eastern Avenue. At each of these intersections there are issues involving congestion at the intersections. Descriptions of all of the transportation issues identified in the study area, including additional issues along Piney Branch Road are provided in the Issues and Recommended Improvements section of this report.

Blair Road

Within the study area, Blair Road is a two-way north south minor arterial running from Peabody Street to Georgia Avenue. Blair Road runs west of the Metro Rail line. The posted speed limit between North Capitol Street and Van Buren Street is 30 mph; between Van Buren Street and Eastern Avenue is 25 mph; and between Eastern Avenue and Georgia Avenue is 30 mph. Blair Road is mostly residential with a few businesses near Cedar Street and 4th Street. As Figure 5 indicates, Blair Road intersects Cedar Street and 4th at a geometrically complicated intersection in the vicinity of the entrance to the Takoma Metro station. The geometric design complicates traffic flow and pedestrian movements through this intersection.

From Whittier Street to Peabody Street, on-street or off-street residential parking is provided on the west side of Blair Road only. There is no parking allowed on Blair Road from Whittier Street to Georgia Avenue.

From Eastern Avenue to Cedar Street, Blair Road has narrow sidewalks on the west side of the street. Detailed descriptions of all of the transportation issues identified in the study area, including additional issues along Blair Road are provided in the Issues and Recommended Improvements section of this report.

Carroll Street/Carroll Avenue

Within the study area, Carroll Street is a two-way east-west minor arterial running from Cedar Avenue to Laurel Avenue. Carroll Avenue runs directly through downtown Takoma Park, Maryland from Willow Avenue through Tulip Avenue with limited metered parking allowed. Parking is limited on Carroll Street. The posted speed limit is 25 mph with sidewalks along the corridor in most locations. There is congestion along Carroll Street/Carroll Avenue during the peak hours. Detailed descriptions of all of the transportation issues identified in the study area, including additional issues along Carroll Street/Carroll Avenue are provided in the Issues and Recommended Improvements section of this report.

Click to View:

Figure 5. Geometry of Blair Rd., 4th St. and Cedar St. NW

Philadelphia Avenue

Within the study area, Philadelphia Avenue is a two-way east-west arterial running from Piney Branch Road to Carroll Avenue with a posted speed limit of 25 mph. Takoma Park Elementary School is located near the intersection of Philadelphia Avenue and Holly Avenue. Sidewalks are provided on both sides of Philadelphia Avenue between Maple Avenue and Carroll Avenue. However, the section between Holly Avenue and Piney Branch Road lacks adequate sidewalk on the south side of Philadelphia Avenue. There is no parking allowed on Philadelphia Avenue within the study area. Detailed descriptions of all of the transportation issues identified in the study area, including additional issues along Philadelphia Avenue are provided in the Issues and Recommended Improvements section of this report.

North Capitol Street

Within the study area, North Capitol Street is a two-way north-south minor arterial running from Kansas Avenue to Van Buren Street. North Capitol is mainly residential; however, there is commercial development at the south end close to Kansas Avenue. The Roots Activity Learning Center is located near Kansas Avenue. The posted speed limit is 25 mph and there are several all-way stops between Eastern Avenue and Kansas Avenue. There are several sections with inadequate sidewalks along North Capitol Street. Detailed descriptions of all of the transportation issues identified in the study area, including additional issues along North Capitol Street are provided in the Summary of Study Area Transportation Issues and Recommendations section of this report.

Kansas Avenue

Within the study area, Kansas Avenue is a two-way north-south minor arterial running from Peabody Street to Eastern Avenue. Kansas Avenue north of Chillum Place to Eastern Avenue is primarily low density residential. However, Kansas Avenue south of Chillum Place to Peabody Street is industrial. The posted speed limit is 25 mph. There are sidewalks on both sides of the street. Kansas Avenue is a fairly wide roadway and is conducive to speeding in the north section near Eastern Avenue. Detailed descriptions of all of the transportation issues identified in the study area, including additional issues along Kansas Avenue are provided in the Issues and Recommended Improvements section of this report.

Aspen Street

Within the study area, Aspen Street is a two-way east-west collector running from Georgia Avenue crossing under the Metro Rail line to Laurel Street. Aspen Street is generally narrow with residential developments on each side of the road. On-street parking is allowed on this street throughout the study area with the exception of the north side from 5th Street to 3rd Street. It has a posted speed limit of 25 mph with sidewalks on both sides. Commuter use of this street is an issue for the study area residents. Speeding on Aspen Street between Georgia Avenue and Piney Branch Road is a major concern for the residents of the area. Detailed descriptions of all of the transportation issues identified in the study area, including additional issues along Aspen Street are provided in the Issues and Recommended Improvements section of this report.

Butternut Street

Within the study area, Butternut Street is a two-way east-west collector running from Georgia Avenue to Blair Road. Butternut Street is a roadway with residential development on both sides of the street. On-Street parking is allowed on this street throughout the study area. It has a posted speed limit of 25 mph. Sidewalks are provided on both sides of the street. Commuter use of this street is an issue for the study area residents, as well. Descriptions of all of the transportation issues identified in the study area, including additional issues along Butternut Street are provided in the Issues and Recommended Improvements section of this report.

5th Street

Within the study area, 5th Street is a two-way north-south collector running from Peabody Avenue to Blair Road. 5th Street is a roadway that has residential land uses on both sides. On-Street parking is allowed only on the west side of the street. It has a posted speed limit of 25 mph. There are sidewalks on both sides of the street.

There are two District of Columbia public schools, Coolidge High School and Whittier Elementary School, located on 5th Street. Thus, the provision of adequate pedestrian facilities and the adequacy of school signing are major concerns around 5th Street. Detailed descriptions of all of the transportation issues identified in the study area, including additional issues along 5th Street are provided in the Issues and Recommended Improvements section of this report.

3rd Street

Within the study area, 3rd Street is a two-way north-south collector running from Peabody Avenue to Blair Road. The primary land use around 3rd Street is residential. There is on-street parking on both sides of the street. 3rd Street has a posted speed limit of 25 mph and there are sidewalks on both sides of the street. Due to the proximity to Coolidge High School and Whittier Elementary School, adequacy of pedestrian facilities and safety are also major concerns along 3rd Street. Detailed descriptions of all of the transportation issues identified in the study area, including additional issues along 3rd Street are provided in the Issues and Recommended Improvements section of this report.

TRAFFIC VOLUMES

The Study Team collected available data on existing turning movement counts in the study area. Additionally, the Study Team performed turning movement counts at critical intersections in the study area for which existing turning movement counts were not available. At each of the intersections where vehicular counts were taken, the Study Team also counted pedestrians crossing each of the street approaches[1]. The manual turning movement counts were taken during the morning peak period, 7:00 AM – 9:00 AM, and during the afternoon peak period, 4:00 PM – 6:00 PM, on a typical weekday (Tuesday, Wednesday or Thursday). The counts were taken from October 22, 2002 to November 7, 2002. The following are the 14 intersections where the Study Team conducted traffic counts:

[1] In this study, bicycles crossing a street approach were counted as a pedestrian crossing the approach.

1. Kalmia Road/Eastern Avenue/Georgia Avenue
2. Piney Branch Road and Eastern Avenue
3. Piney Branch Road and Blair Road
4. Blair Road and Van Buren Street
5. Carroll Street/Eastern Avenue/Willow Street
6. Piney Branch and Aspen Street
7. Butternut and Piney Branch Ave
8. Laurel Street and Eastern Avenue
9. Philadelphia Avenue and Piney Branch Road
10. Carroll Avenue and Laurel Avenue
11. Piney Branch Road and Georgia Avenue
12. Van Buren Street and Eastern Avenue
13. Kansas Avenue and Eastern Avenue
14. New Hampshire Avenue and Eastern Avenue

In addition, the following are the 14 intersections for which recent counts were available:

1. Eastern Avenue/Blair Road/Georgia Avenue
2. Georgia Avenue and Juniper Street
3. Georgia Avenue and Fern Street
4. Georgia Avenue and Fern Place
5. Georgia Avenue and Elder Street
6. Georgia Avenue and Dahlia Street
7. Georgia Avenue and Butternut Street
8. Georgia Avenue and Aspen Street
9. Georgia Avenue and Peabody Street
10. Blair Road and Dahlia Street
11. Blair Road/Cedar Street/Carroll Street
12. Blair Road and Aspen Street
13. Carroll Street and Maple Street
14. Carroll Street and Cedar Avenue

All of the intersections were not counted on the same day, thus, there were minor discrepancies in the overall balance of traffic volumes throughout the study area network. The discrepancies are due primarily to traffic variations that occur from day to day. To improve the modeling of existing traffic conditions, the Study Team applied standard traffic engineering techniques to adjust the turning movement counts at intersections where unjustified imbalances were found. The existing, 2002, balanced peak hour turning movement counts for the study area are presented in Figure 6. The raw volume counts for all of the 28 intersections are presented in Appendix B.

Click to View:

Figure 6. Existing (2002) AM and PM Peak Hour Volumes

In addition to turning movement counts, the Study Team collected daily traffic volumes using automatic traffic recorders (ATR's) over a two-week period. These counts were taken from November 12, 2002 to November 25, 2002 at the following two locations:

1. Georgia Avenue between Dahlia Street and Butternut Street.
2. Piney Branch Road between Blair Road and Cedar Street.

Georgia Avenue is the roadway in the study area with the largest daily volume. As Figure 7 indicates, during weekdays, Georgia Avenue carries approximately 26,000 daily vehicular trips. Georgia Avenue is heavily used by trucks. Along Georgia Avenue, the average weekday heavy vehicle percentage is 9.3 percent. Piney Branch Road carries approximately 13,500 daily vehicles during weekdays, which is a large daily volume for a two-lane road. Along Piney Branch Road, the average weekday heavy vehicle percentage is 3.4 percent.

As shown in Figure 8, traffic volumes fluctuate throughout the day. The PM peak period volumes on Georgia Avenue are greater than the AM peak period volumes. Contrastingly, as shown in Figure 9, on Piney Branch, the AM peak period volumes are slightly greater than the PM peak period volumes. For both of these major roadways, the PM peak period is longer than the AM peak period.

TRAVEL SPEEDS

Travel speed and travel time measurements were collected along the primary routes in the study area and at selected spot locations in order to evaluate the efficiency of the roadway system, to assess speeding and to gather information needed in the development of the traffic model.

Corridor Speeds

In order to assess corridor speeds, a test vehicle was driven along the study routes in accordance with the "floating-car" technique, which means that the driver keeps up with the prevailing traffic. Thus, the test car could travel at speeds above the speed limit at some sections of the study routes.

The test car was driven along eight study routes in each direction during the weekday AM and PM peak periods: 7:00 AM - 9:00 AM and 4:00 PM - 6:00 PM, as well as during Saturdays and Sundays from 10:00 AM to 2:00 PM during the month of November, 2002. The elapsed travel times at predetermined travel points and the distance between the selected travel points were recorded. This travel time includes delays because of congestion on roadways or traffic control devices, such as traffic signals or stop signs. Average travel speed was then calculated for each roadway segment as well as an overall average speed for the study route. Travel speeds on each study route are presented in Figures 10, 11, 12 and 13.

A comparison of Figures 10 and 11 indicates that generally vehicles travel at lower speeds during the PM peak hour than during the AM peak hour. A comparison of Figures 12 and 13 to Figures 10 and 11 indicates that travel speeds on Blair Road and Piney Branch Road are greater during the weekends.

Figure 7
Average Daily Traffic Volumes

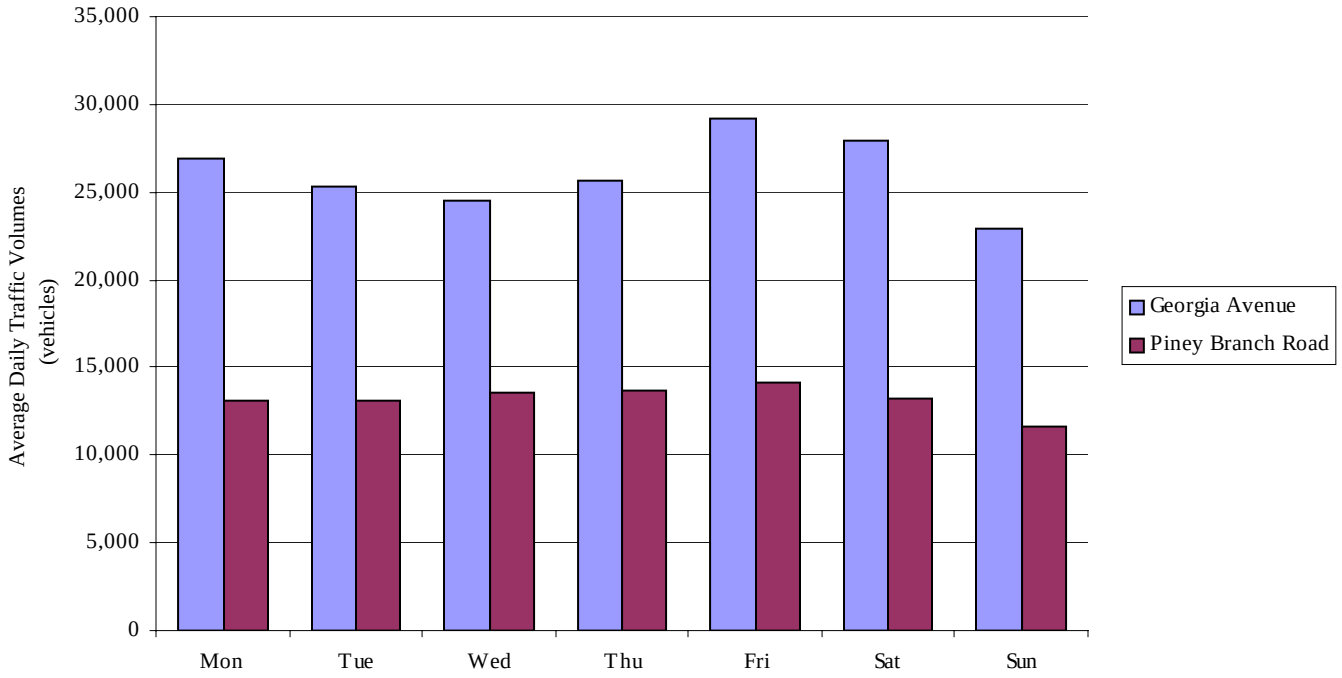


Figure 8
Hourly Traffic Volumes on Georgia Avenue

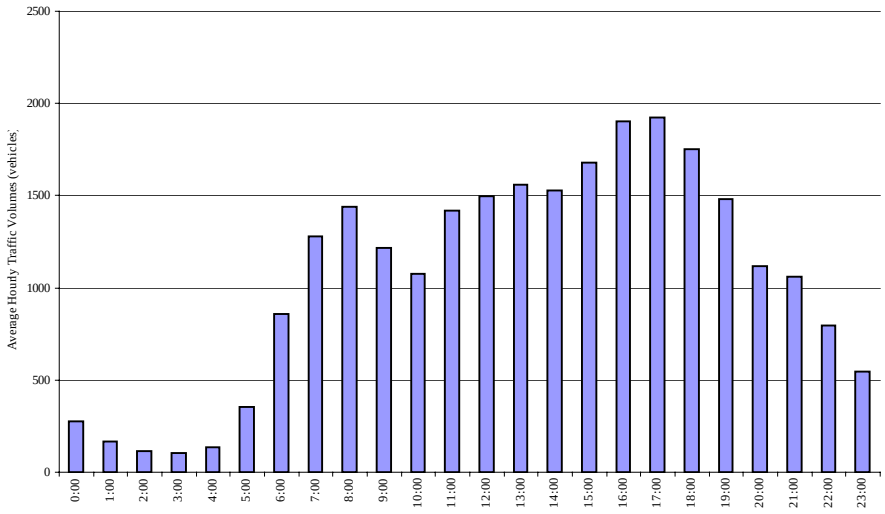
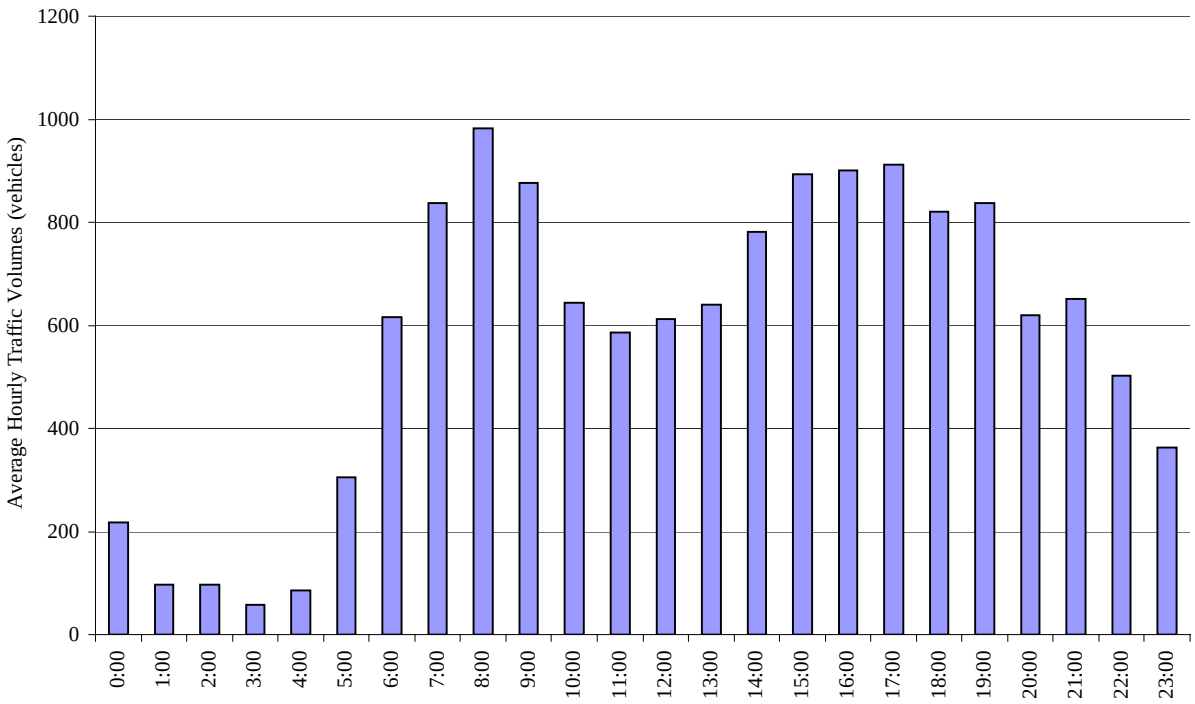


Figure 9
Hourly Traffic Volumes on Piney Branch Road



Click to View:

Figure 10. AM Peak Hour Speed Map

Click to View:

Figure 11. PM Peak Hour Speed Map

Click to View:

Figure 12. Saturday Speed Map

Click to View:

Figure 13. Sunday Speed Map

Average travel speeds on Piney Branch Road in the northbound direction and on Carroll Street in the eastbound direction were found to be below 10 mph during the PM peak hour. This is due to the high level of congestion on these roadways during the PM peak hour.

As shown in Table 1, there are several segments where the average travel speed is significantly below the speed limit. These segments are on Blair Road, Georgia Avenue, Piney Branch Road and Eastern Avenue. Speeds on Blair Road northbound between Aspen Street and Carroll Street are consistently low, which is a reflection of the congested conditions at the intersection of Blair Road and Cedar Street. The average travel speed for all of the roadway segments for which data was collected is presented in Appendix C.

Table 1
Average Travel Speed at Selected Segments

Roadway and Direction	Segment	Speed Limit	AM Peak	PM Peak	Saturday	Sunday
Georgia Avenue Northbound	Missouri Avenue – Piney Branch Road	30	14.8	17.6	18.2	15.5
Georgia Avenue Southbound	13th Street – Blair Road	30	13.8	13.1	9.4	9.9
Piney Branch Road Northbound	Aspen Street – Blair Road	30	17.6	5.5	20.5	11.4
Piney Branch Road Southbound	Blair Road – Aspen Street	30	18.1	15.4	29.6	27.9
Cedar/Carroll Street Eastbound	Piney Branch Road – Blair Road	25	7.7	5.6	9.2	7.7
Cedar/Carroll Street Westbound	Laurel Street – Eastern Avenue	25	7.1	13.2	15.4	10.8
Blair Road Northbound	Aspen Street – Cedar/Carroll Street	25	4.9	5.0	5.5	6.9
Blair Road Southbound	Piney Branch Road – Cedar/Carroll Street	25	9.8	10.7	13.4	8.1
Eastern Avenue Northbound	Laurel Street – Carroll Street	25	5.5	9.2	16.7	6.6
Eastern Avenue Southbound	Carroll Street – Laurel Street	25	11.8	8.7	16.1	17.3

Note: Appendix C presents a list of the recorded speeds for all the studied segments in the Study Area.

Spot Location Speeds

In addition to the travel speed data collected by driving with traffic through the principal study corridors, the Study Team collected speed data using automatic traffic recorders (ATR's) over a two-week period from November 12, 2002 to November 25, 2002 at the following locations:

1. Georgia Avenue between Dahlia Street and Butternut Street.
2. Piney Branch Road between Blair Road and Cedar Street.

For a typical weekday, the average 85th percentile speed at the Georgia Avenue location was found to be 35.4 mph. The average 85th percentile weekday speed at the Piney Branch location was found to be 30.9 mph. This indicates that a significant number of vehicles travel at speeds significantly above the speed limit.

Furthermore, in order to assess issues related to speeding in residential areas, the Study Team collected spot speed data during off-peak periods at selected locations throughout the study area. These locations were selected based on citizen input with respect to speeding in residential areas. The locations where the speed data was collected are listed in Table 2. The speed data was collected for both directions of travel. As Table 2 indicates, at all of the segments evaluated, there were vehicles exceeding the speed limit. The fastest vehicles were observed on Kansas Street, Blair Road, Philadelphia Avenue, Eastern Avenue and Piney Branch Road. At Kansas Street near Sheridan Street, Blair Road between Eastern Avenue and Georgia Avenue,

Philadelphia Avenue between Holly Street and Cedar Street, Eastern Avenue between Georgia Avenue and Blair Road, and Piney Branch Road south of Blair Road the average speed exceeded by three or more miles per hour the posted speed limit.

Table 2
Off-Peak Spot Speeds at Selected Locations

	Location	Posted Speed Limit (mph	Minimum Speed (mph)	Average Speed (mph)	Maximum Speed (mph)
1	9th Street between Aspen Street and Butternut Street	25	21.2	22.3	27.6
2	8th Street between Aspen Street and Highland Street	25	18.2	22.7	26.6
3	Aspen Street between Georgia Avenue and Piney Branch Road	25	11.7	24.8	32.6
4	Blair Road between Butternut Street and Aspen Street	25	14.9	27.7	38.3
5	Aspen Street west of Blair Road	25	14.3	23.5	33.6
6	3rd Street north of Sheridan Street	25	14.8	20.0	27.6
7	N. Capitol Street near Underwood Place	25	15.3	25.2	32.2
8	Kansas Street near Sheridan Street	25	22.3	30.0	47.0
9	Blair Road between Eastern Avenue and Georgia Avenue	30	26.3	33.1	43.7
10	Philadelphia Avenue between Holly Street and Cedar St.	25	22.1	29.9	43.4
11	Eastern Avenue between Georgia Avenue and Blair Road	25	20.1	31.0	48.4
12	Piney Branch Road west of 6th Street	30	23.4	26.1	43.7
13	Piney Branch Road south of Blair Road	30	26.3	34.6	44.6

ORIGIN-DESTINATION PATTERNS IN THE STUDY AREA

In order to gain an understanding of existing traffic patterns in the study area, the Study Team conducted a comprehensive assessment of origins and destinations for vehicles entering and exiting the study area during the AM and PM peak period. The origin-destination survey helped identify the travel patterns of all vehicles entering the study area during the peak hours.

Data Collection for Origin-Destination Survey

The data collection effort for the origin-destination survey encompassed the following tasks:

1. Recording of license plates at all major entry and exit points of vehicles entering and exiting the study area: survey personnel (surveyors) recorded license plate data, state and number, onto tape recorders at the locations shown in Figure 14 on November 12, 2002.
2. Recording of missed vehicles: if a surveyor could not get the license plate of a vehicle, he/she was instructed to note the vehicle as a "missed" to have control totals that could be used for the expansion of the survey data.
3. Transcription of license plate records: surveyors entered the state and license plate data for each location onto a computerized database.

Click to View:

Figure 14. License Plate Survey Locations for Origin-Destination Study